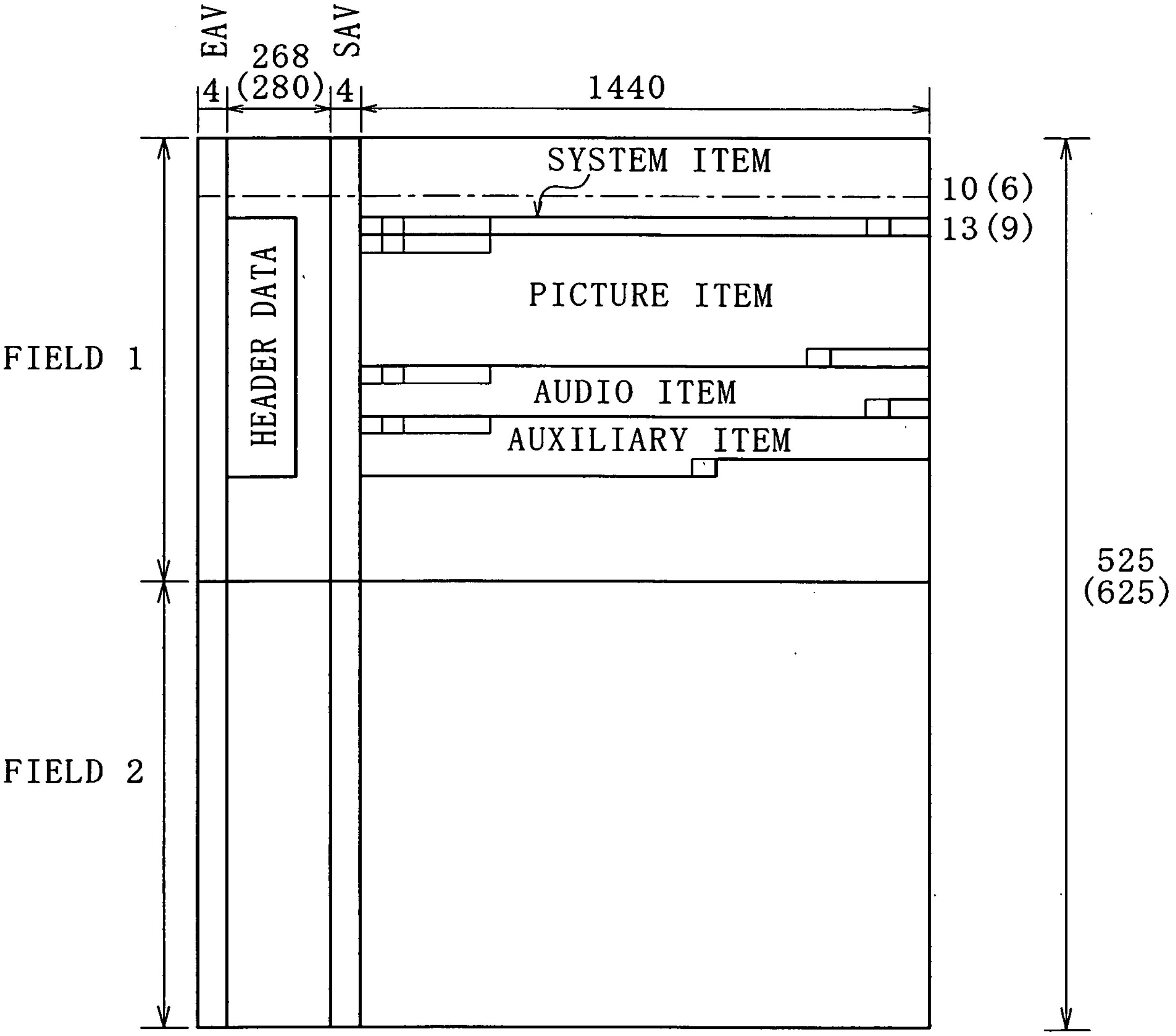
S99P1103US00 J

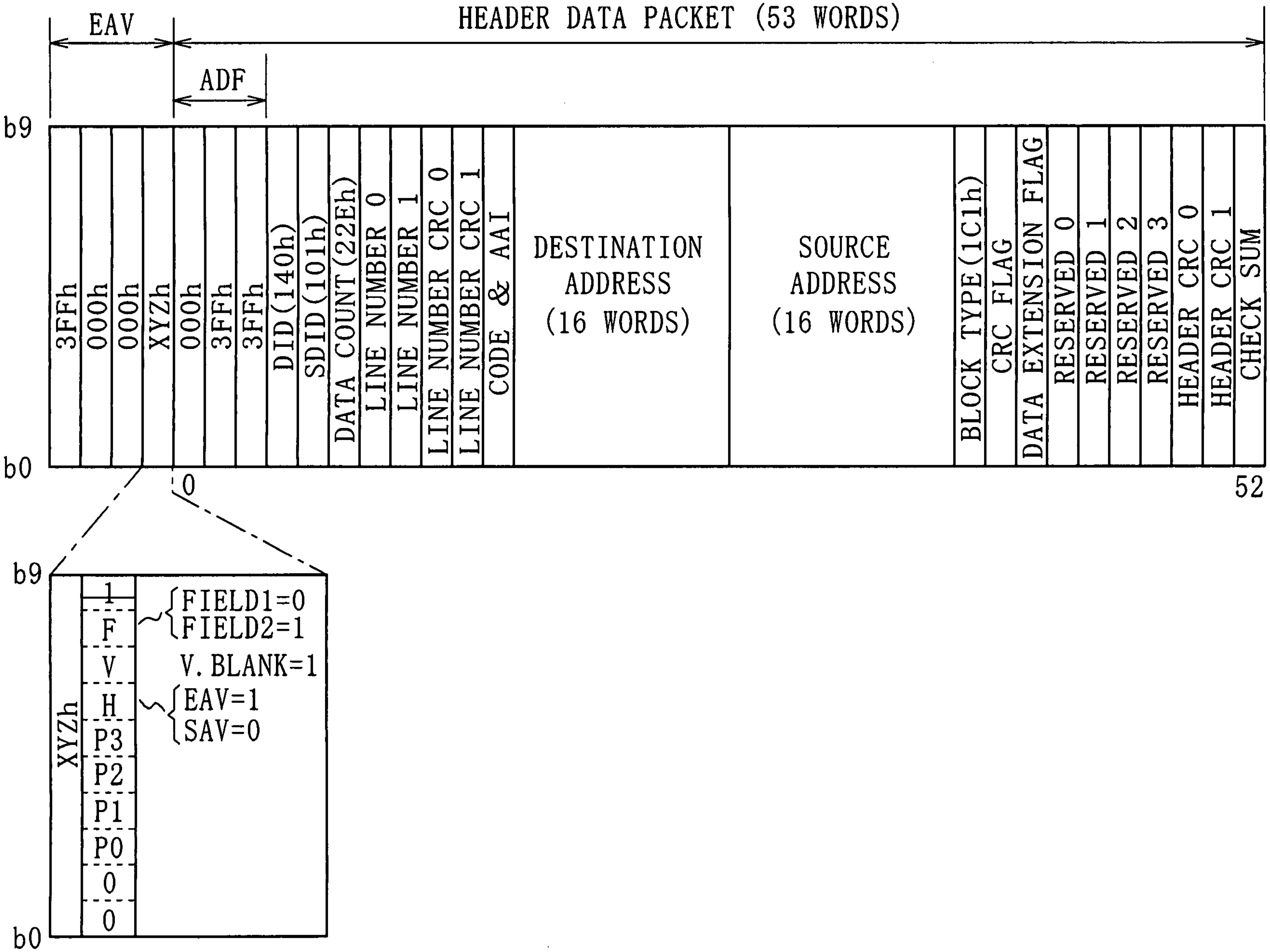
09/719791

F I G. 1


EAV
268
(280)
SAV
4
4
1440
SYSTEM ITEM
10(6)
13(9)
HEADER DATA
PICTURE ITEM
FIELD 1
AUDIO ITEM
AUXILIARY ITEM
525
(625)
FIELD 2

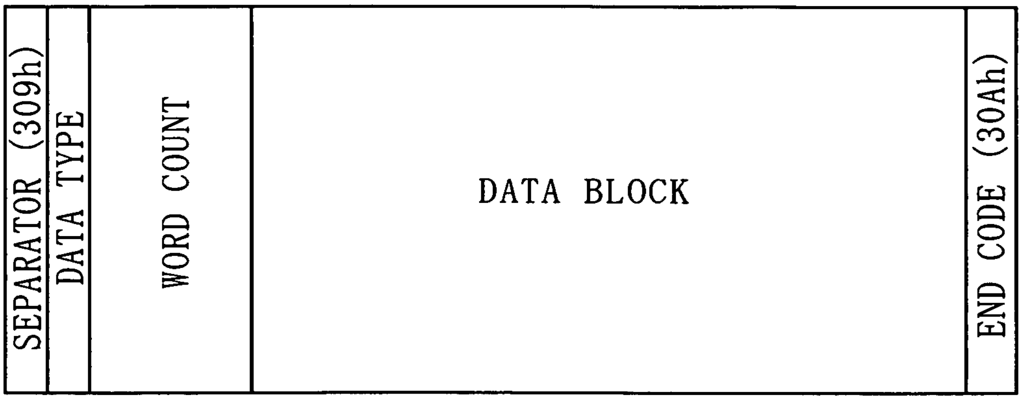
09719791 .020601

FIG. 2


HEADER DATA PACKET (53 WORDS)
EAV
ADF
b9
b0
3FFh
000h
000h
XYZh
000h
3FFh
3FFh
DID(140h)
SDID(101h)
DATA COUNT(22Eh)
LINE NUMBER 0
LINE NUMBER 1
LINE NUMBER CRC 0
LINE NUMBER CRC 1
CODE & AAI
DESTINATION ADDRESS (16 WORDS)
SOURCE ADDRESS (16 WORDS)
BLOCK TYPE(1C1h)
CRC FLAG
DATA EXTENSION FLAG
RESERVED 0
RESERVED 1
RESERVED 2
RESERVED 3
HEADER CRC 0
HEADER CRC 1
CHECK SUM
0
52
b9
b0
XYZh
1
F
V
H
P3
P2
P1
P0
0
0
FIELD1=0
FIELD2=1
V. BLANK=1
EAV=1
SAV=0

09/719791

FIG. 3


SEPARATOR (309h)
DATA TYPE
WORD COUNT
DATA BLOCK
END CODE (30Ah)

09719791.032601

FIG. 4

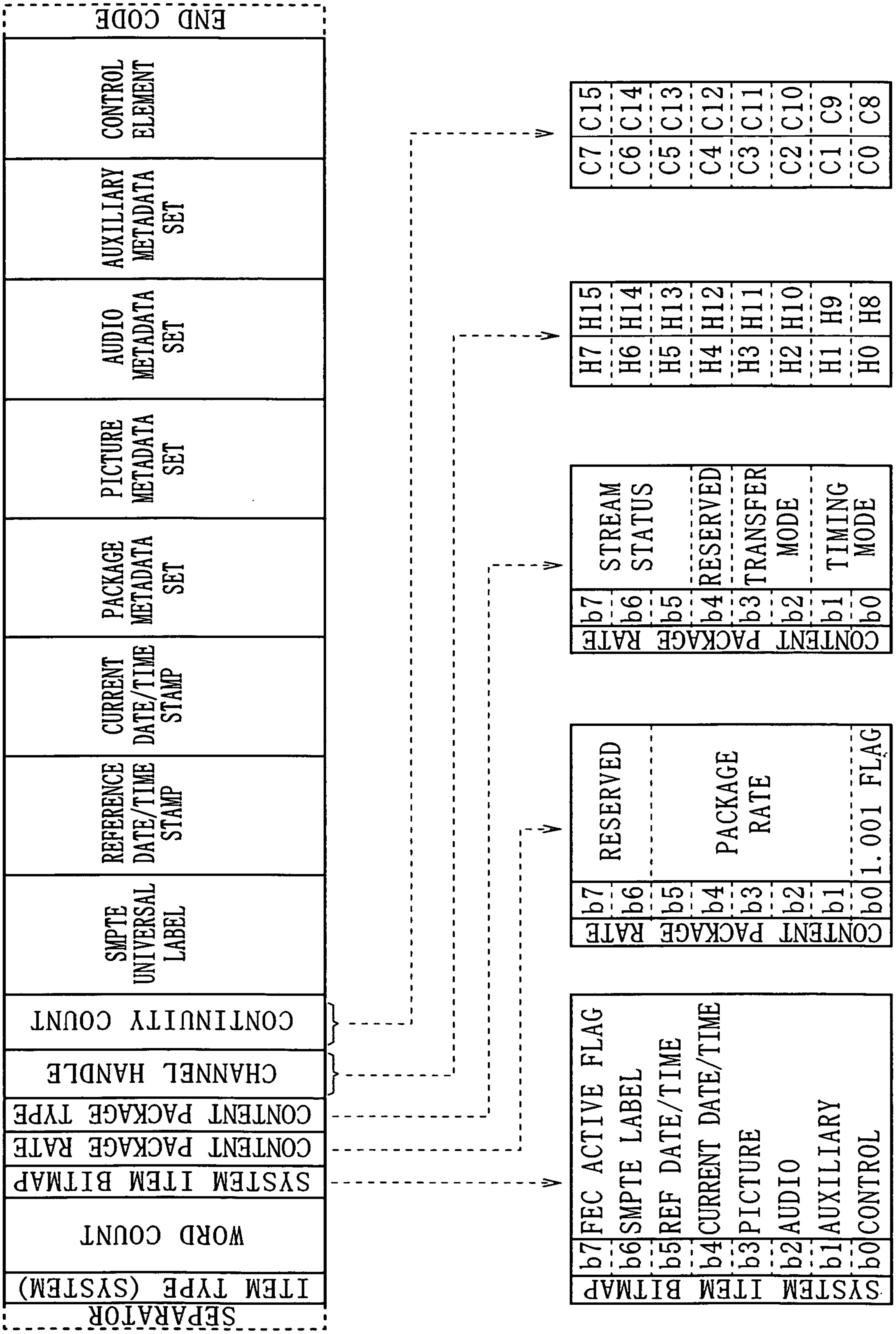

SEPARATOR
ITEM TYPE (SYSTEM)
WORD COUNT
SYSTEM ITEM BITMAP
CONTENT PACKAGE RATE
CONTENT PACKAGE TYPE
CHANNEL HANDLE
CONTINUITY COUNT
SMPTE UNIVERSAL LABEL
REFERENCE DATE/TIME STAMP
CURRENT DATE/TIME STAMP
PACKAGE METADATA SET
PICTURE METADATA SET
AUDIO METADATA SET
AUXILIARY METADATA SET
CONTROL ELEMENT
END CODE
SYSTEM ITEM BITMAP
b7 FEC ACTIVE FLAG
b6 SMPTE LABEL
b5 REF DATE/TIME
b4 CURRENT DATE/TIME
b3 PICTURE
b2 AUDIO
b1 AUXILIARY
b0 CONTROL
CONTENT PACKAGE RATE
b7 b6 RESERVED
b5 b4 b3 b2 b1 PACKAGE RATE
b0 1.001 FLAG
CONTENT PACKAGE RATE
b7 b6 b5 STREAM STATUS
b4 RESERVED
b3 b2 TRANSFER MODE
b1 b0 TIMING MODE
H7 H6 H5 H4 H3 H2 H1 H0
H15 H14 H13 H12 H11 H10 H9 H8
C7 C6 C5 C4 C3 C2 C1 C0
C15 C14 C13 C12 C11 C10 C9 C8

FIG. 5

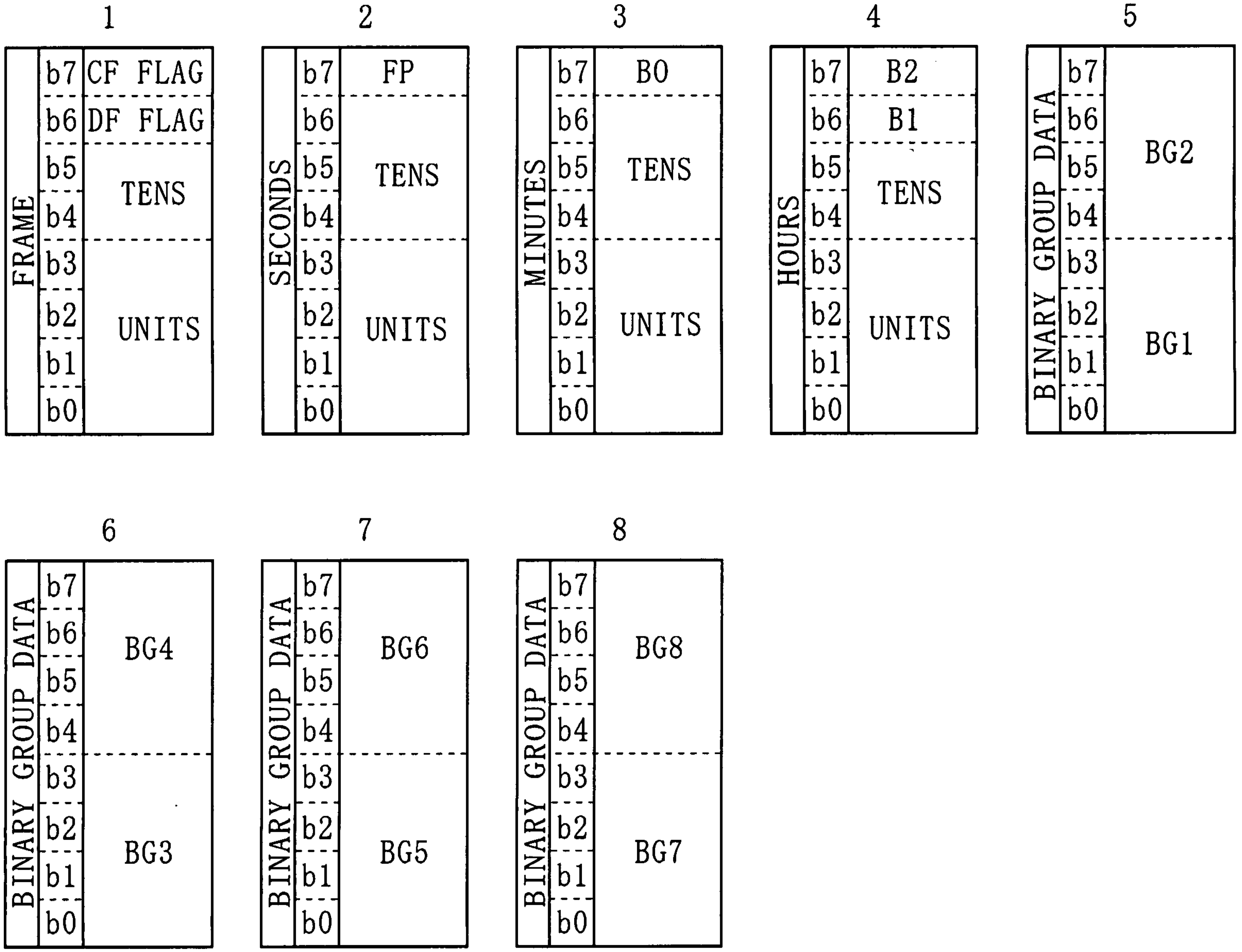

1
FRAME
b7
b6
b5
b4
b3
b2
b1
b0
CF FLAG
DF FLAG
TENS
UNITS
2
SECONDS
b7
b6
b5
b4
b3
b2
b1
b0
FP
TENS
UNITS
3
MINUTES
b7
b6
b5
b4
b3
b2
b1
b0
B0
TENS
UNITS
4
HOURS
b7
b6
b5
b4
b3
b2
b1
b0
B2
B1
TENS
UNITS
5
BINARY GROUP DATA
b7
b6
b5
b4
b3
b2
b1
b0
BG2
BG1
6
BINARY GROUP DATA
b7
b6
b5
b4
b3
b2
b1
b0
BG4
BG3
7
BINARY GROUP DATA
b7
b6
b5
b4
b3
b2
b1
b0
BG6
BG5
8
BINARY GROUP DATA
b7
b6
b5
b4
b3
b2
b1
b0
BG8
BG7

FIG. 6

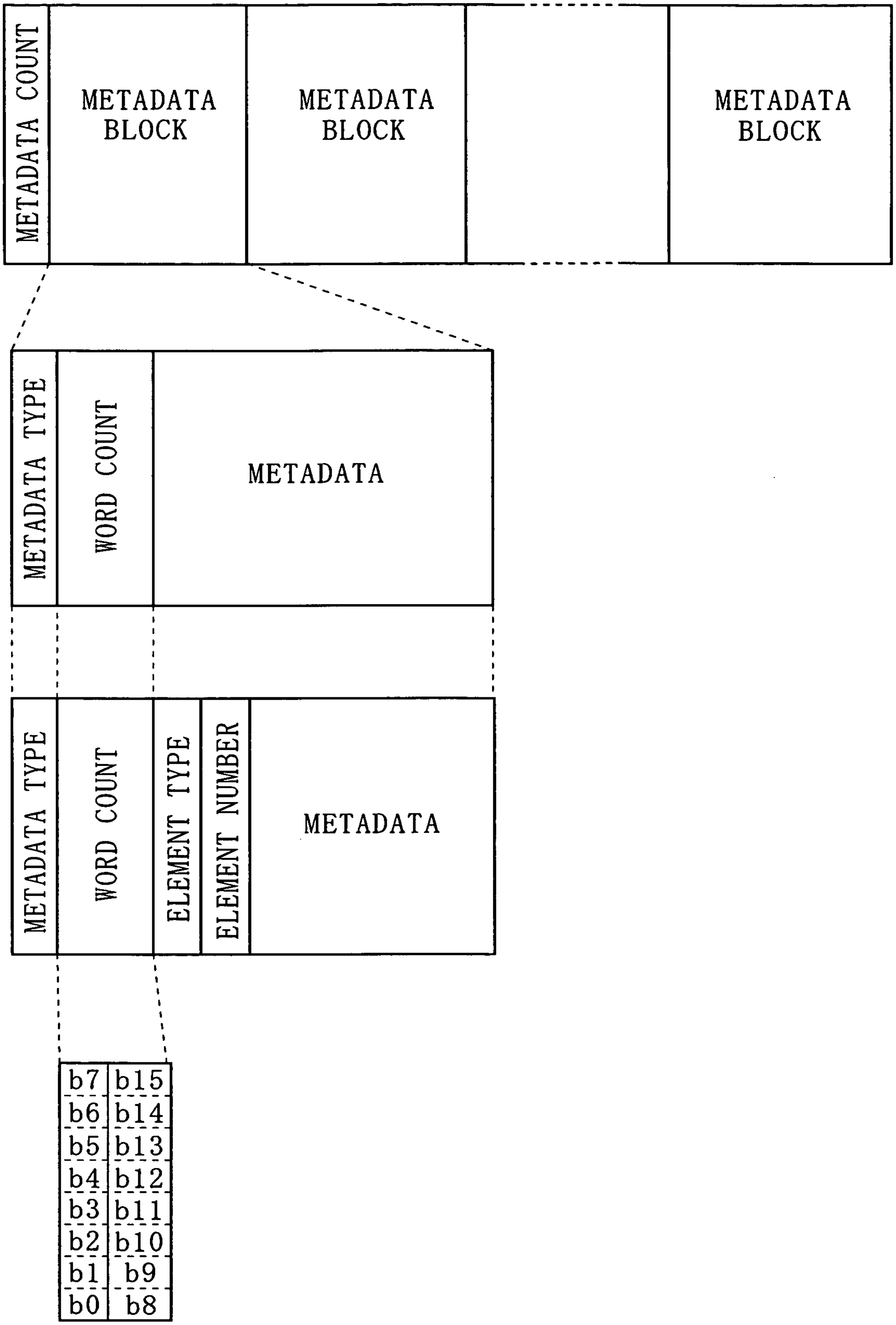

METADATA COUNT
METADATA BLOCK
METADATA BLOCK
METADATA BLOCK
METADATA TYPE
WORD COUNT
METADATA
METADATA TYPE
WORD COUNT
ELEMENT TYPE
ELEMENT NUMBER
METADATA
b7 b15
b6 b14
b5 b13
b4 b12
b3 b11
b2 b10
b1 b9
b0 b8

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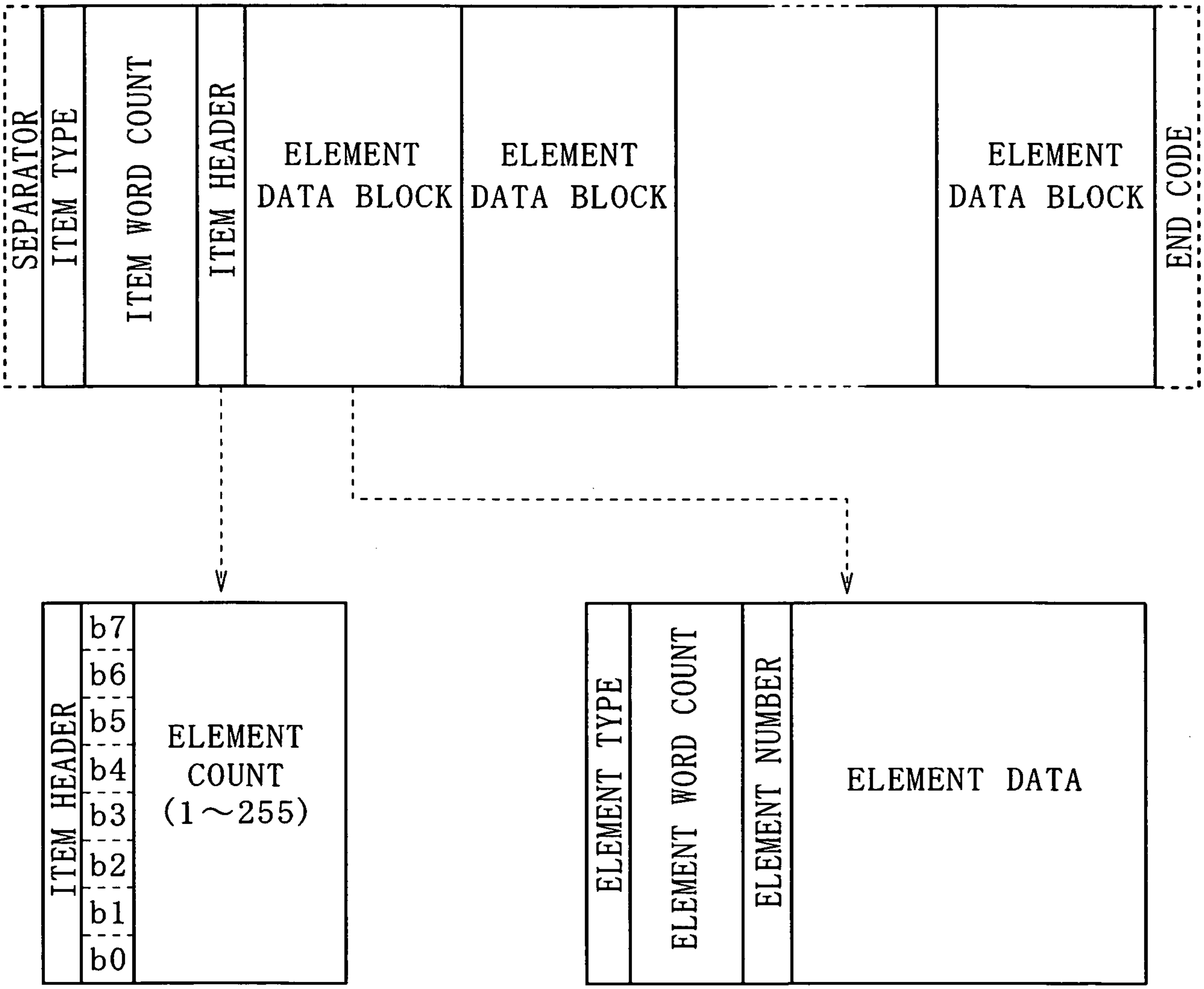
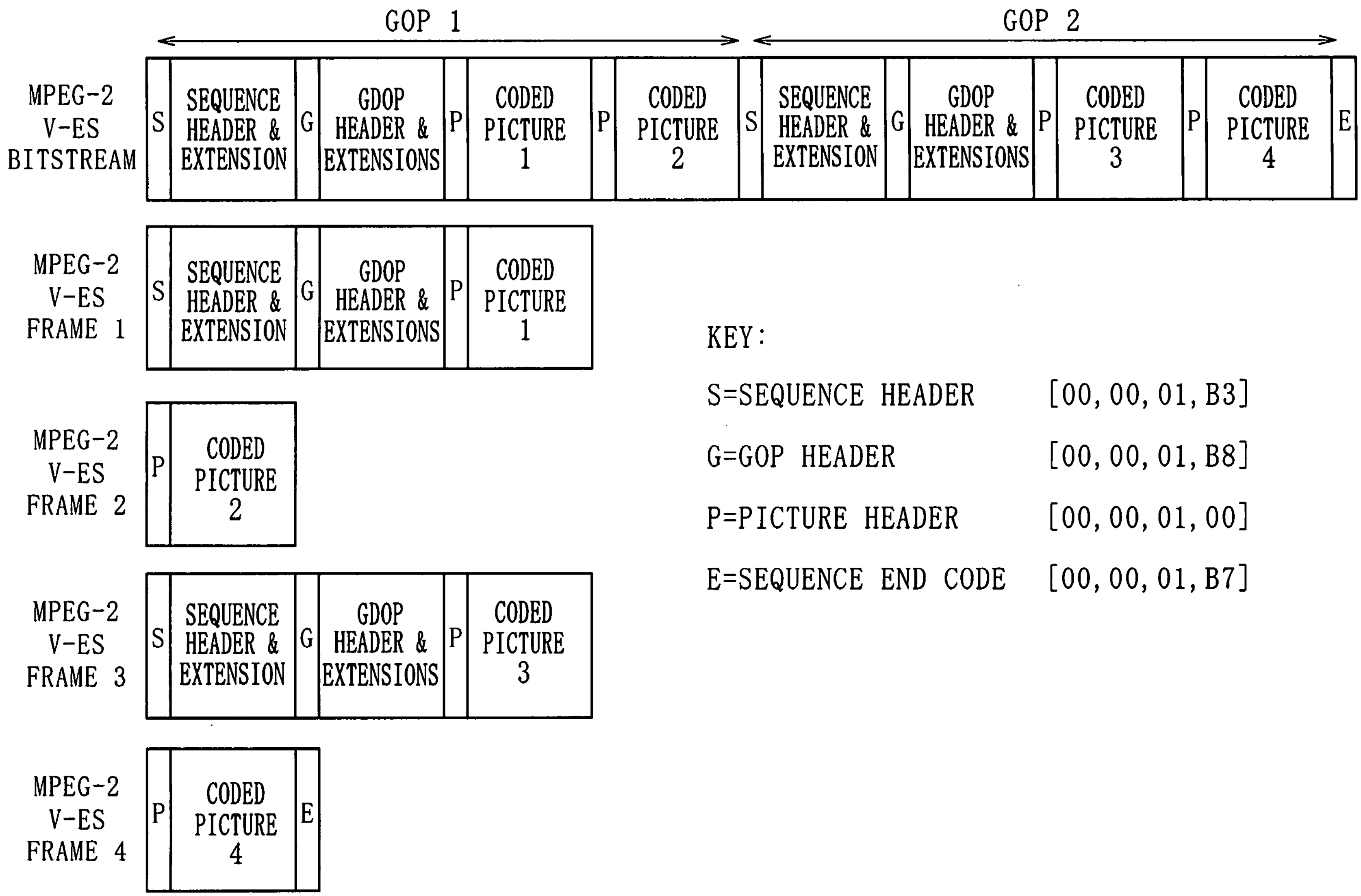
FIG. 7


SEPARATOR
ITEM TYPE
ITEM WORD COUNT
ITEM HEADER
ELEMENT DATA BLOCK
ELEMENT DATA BLOCK
ELEMENT DATA BLOCK
END CODE
ITEM HEADER
b7
b6
b5
b4
b3
b2
b1
b0
ELEMENT COUNT (1～255)
ELEMENT TYPE
ELEMENT WORD COUNT
ELEMENT NUMBER
ELEMENT DATA

09719791 .012601

FIG. 8


GOP 1
GOP 2
MPEG-2 V-ES BITSTREAM
MPEG-2 V-ES FRAME 1
MPEG-2 V-ES FRAME 2
MPEG-2 V-ES FRAME 3
MPEG-2 V-ES FRAME 4
S
SEQUENCE HEADER & EXTENSION
G
GDOP HEADER & EXTENSIONS
P
CODED PICTURE 1
CODED PICTURE 2
CODED PICTURE 3
CODED PICTURE 4
E

KEY:

S=SEQUENCE HEADER [00, 00, 01, B3]

G=GOP HEADER [00, 00, 01, B8]

P=PICTURE HEADER [00, 00, 01, 00]

E=SEQUENCE END CODE [00, 00, 01, B7]

# F I G. 9

| | | |
|---|---|---|
| PICTURE EDITING BITMAP | b7 | EDIT FLAG |
| | b6 | |
| | b5 | ERROR FLAG |
| | b4 | |
| | b3 | PICTURE CODING VALID |
| | b2 | PROFILE/LEVEL VALID |
| | b1 | HV SIZE VALID |
| | b0 | USER BITMAP VALID |

| | | |
|---|---|---|
| PICTURE CODING | b7 | CLOSED GOP |
| | b6 | BROKEN LINK |
| | b5 | PICTURE CODING TYPE |
| | b4 | |
| | b3 | |
| | b2 | RESERVED |
| | b1 | |
| | b0 | |

| | | |
|---|---|---|
| MPEG USER BITMAP | b7 | HISTORY DATA |
| | b6 | ANC DATA |
| | b5 | VIDEO INDEX |
| | b4 | PICTURE ORDER |
| | b3 | TIMECODE 2 |
| | b2 | TIMECODE 1 |
| | b1 | H-PHASE |
| | b0 | V-PHASE |

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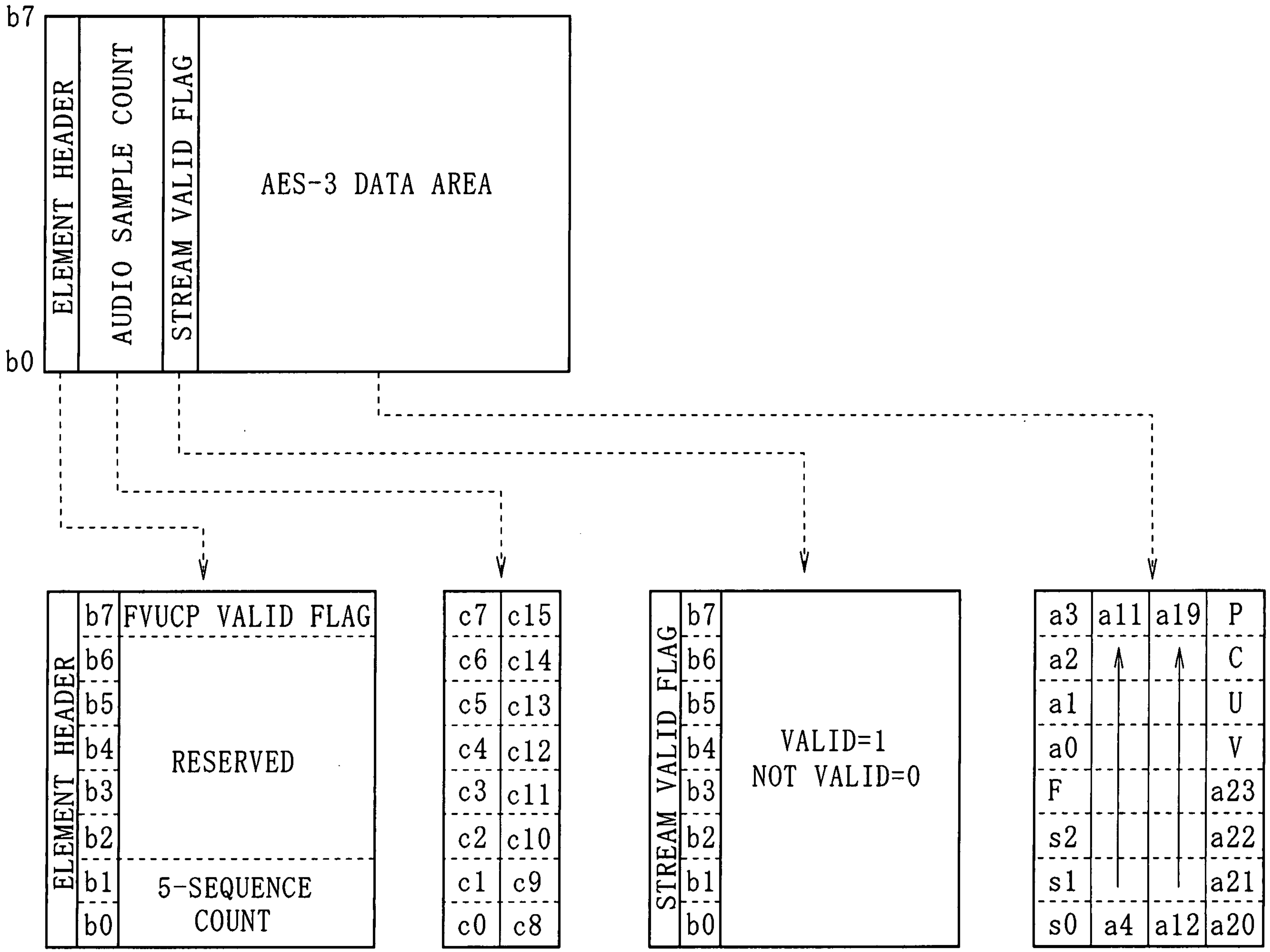
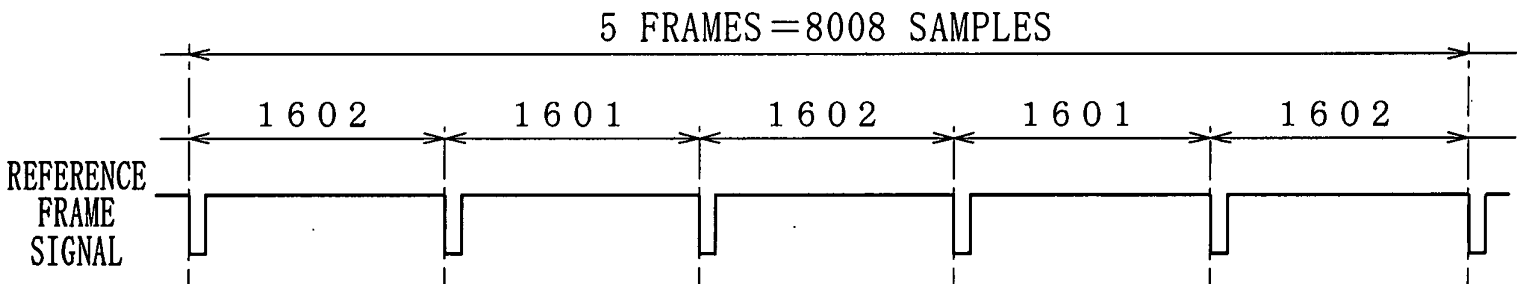
## F I G. 1 0


b7
b0
ELEMENT HEADER
AUDIO SAMPLE COUNT
STREAM VALID FLAG
AES-3 DATA AREA
ELEMENT HEADER
b7
b6
b5
b4
b3
b2
b1
b0
FVUCP VALID FLAG
RESERVED
5-SEQUENCE COUNT
c7 c15
c6 c14
c5 c13
c4 c12
c3 c11
c2 c10
c1 c9
c0 c8
STREAM VALID FLAG
VALID=1
NOT VALID=0
a3 a11 a19 P
a2 C
a1 U
a0 V
F a23
s2 a22
s1 a21
s0 a4 a12 a20

F I G. 11A


5 FRAMES=8008 SAMPLES
1602
1601
1602
1601
1602
REFERENCE FRAME SIGNAL

F I G. 11B

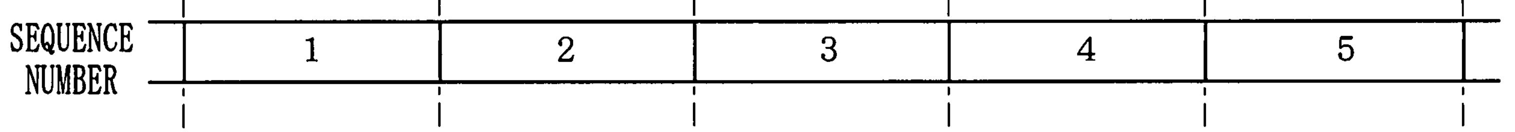

SEQUENCE NUMBER
1
2
3
4
5

FIG. 12

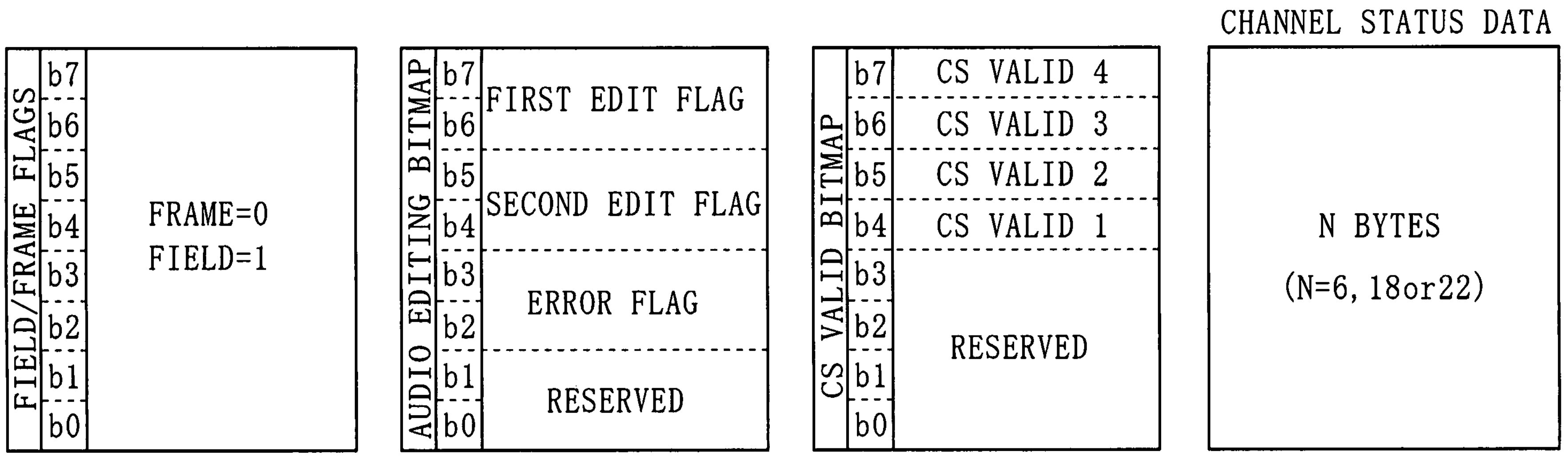

FIELD/FRAME FLAGS
b7
b6
b5
b4
b3
b2
b1
b0
FRAME=0
FIELD=1
AUDIO EDITING BITMAP
b7
b6
b5
b4
b3
b2
b1
b0
FIRST EDIT FLAG
SECOND EDIT FLAG
ERROR FLAG
RESERVED
CS VALID BITMAP
b7
b6
b5
b4
b3
b2
b1
b0
CS VALID 4
CS VALID 3
CS VALID 2
CS VALID 1
RESERVED
CHANNEL STATUS DATA
N BYTES
(N=6, 18or22)

FIG. 13

| TRANSFER MODE / TIMING MODE | SYNCHRONOUS (SYNCHRONOUS) | ISOCHRONOUS (ISOCHRONOUS) | ASYNCHRONOUS (ASYNCHRONOUS) |
|---|---|---|---|
| NORMAL (NORMAL) | STANDARD ONE-TIME NORMAL SPEED | STANDARD VARIABLE SPEED | ASYNCHRONOUS PACKING |
| ADVANCED (ADVANCED) | O/E INVERSION | O/E INVERSION VARIABLE SPEED | |
| DUAL (DUAL) | FIELD PACKING | FIELD PACKING | |
| RESERVED | NOT PRESCRIBED | NOT PRESCRIBED | |

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09719791.032601

FIG. 14A
NORMAL

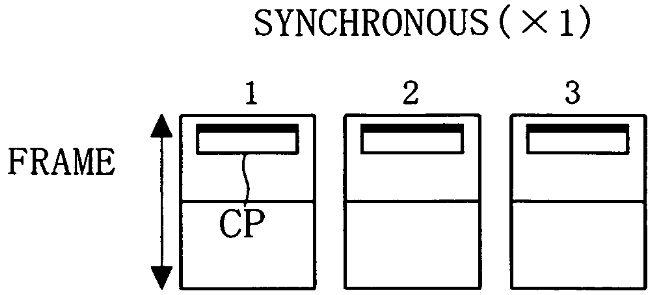

SYNCHRONOUS (× 1)
1
2
3
FRAME
CP

FIG. 14B
ADVANCED

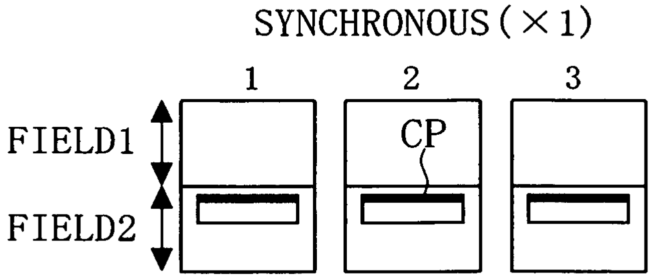

SYNCHRONOUS (× 1)
1
2
3
FIELD1
FIELD2
CP

FIG. 14C
DUAL

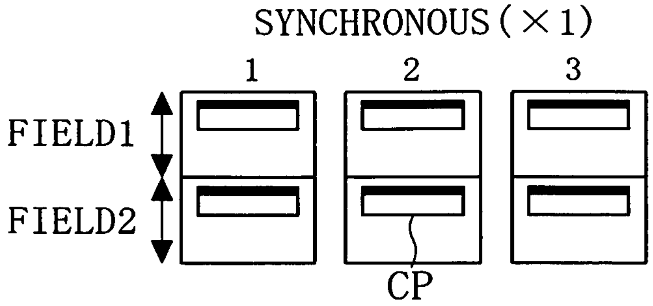
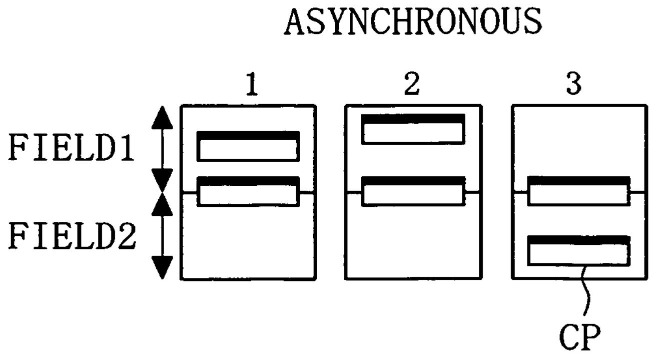

SYNCHRONOUS (× 1)
1
2
3
FIELD1
FIELD2
CP

FIG. 14D


ASYNCHRONOUS
1
2
3
FIELD1
FIELD2
CP

09719791 .032601

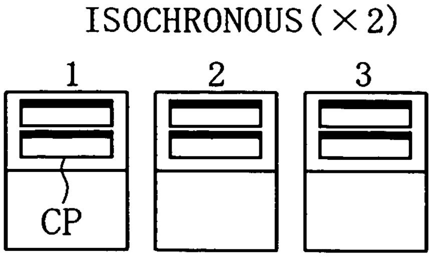

ISOCHRONOUS (×2)
1
2
3
CP

FIG. 15A
NORMAL

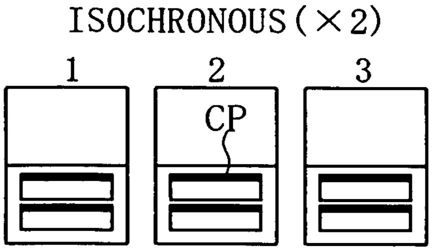

ISOCHRONOUS (×2)
1
2
3
CP

FIG. 15B
ADVANCED

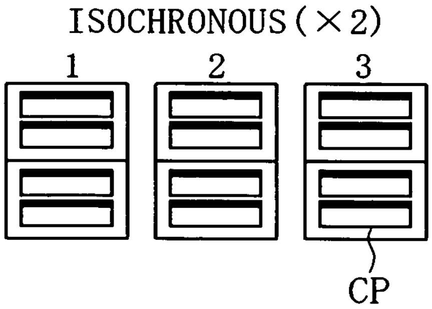

ISOCHRONOUS (×2)
1
2
3
CP

FIG. 15C
DUAL

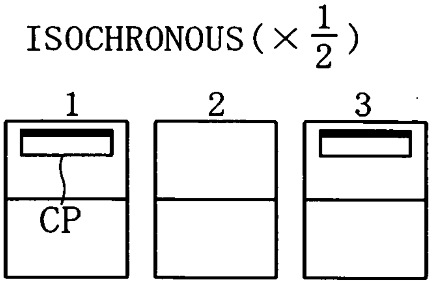

ISOCHRONOUS (× 1/2)
1
2
3
CP

FIG. 15D
NORMAL

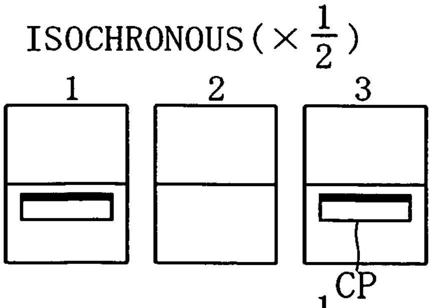

ISOCHRONOUS (× 1/2)
1
2
3
CP

FIG. 15E
ADVANCED

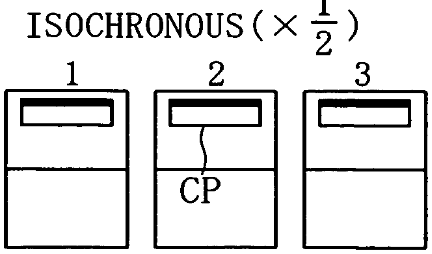

ISOCHRONOUS (× 1/2)
1
2
3
CP

FIG. 15F
DUAL

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FIG. 16

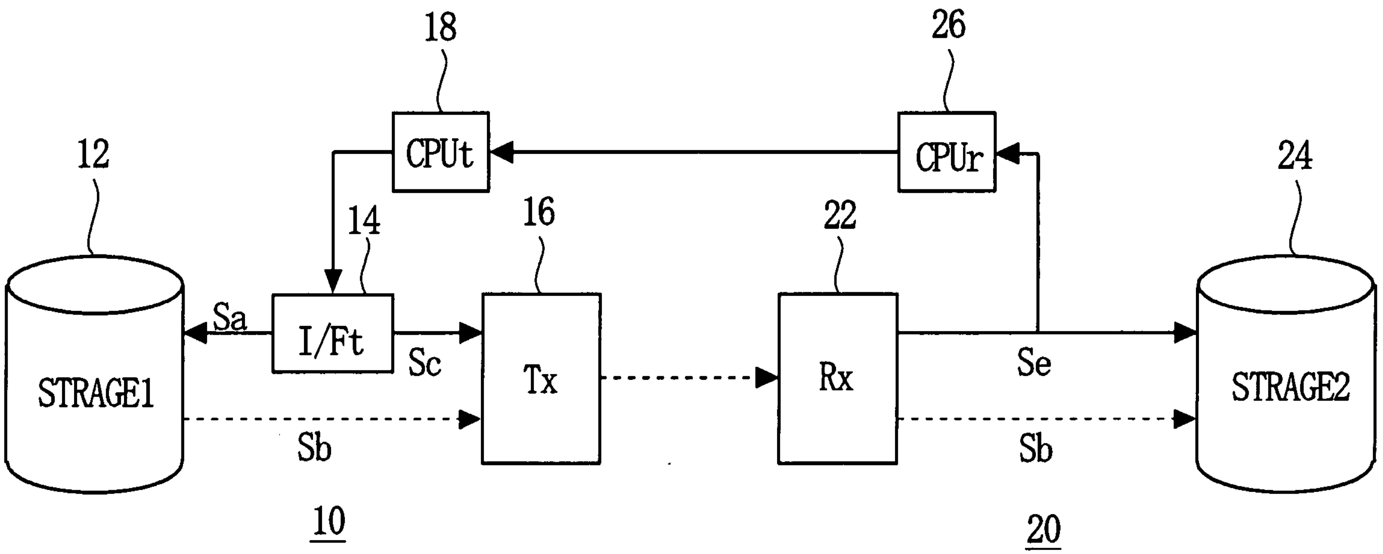
18
26
12
CPUt
CPUr
24
14
16
22
Sa
I/Ft
STRAGE1
Sc
Tx
Rx
Se
STRAGE2
Sb
Sb
10
20

FIG. 17A
FIG. 17B
FIG. 17C
FIG. 17D
FIG. 17E
FIG. 17F

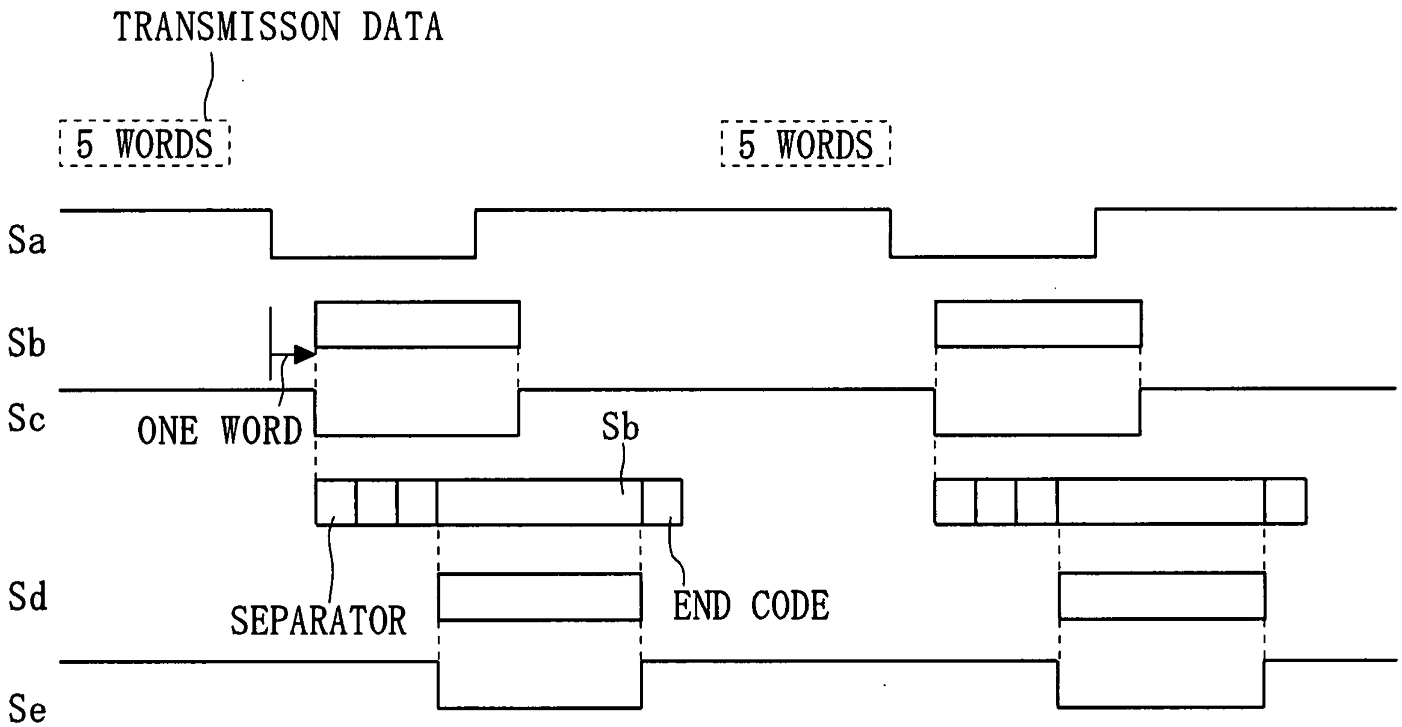
TRANSMISSON DATA
5 WORDS
5 WORDS
Sa
Sb
Sc
ONE WORD
Sb
SEPARATOR
END CODE
Sd
Se

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FIG. 18

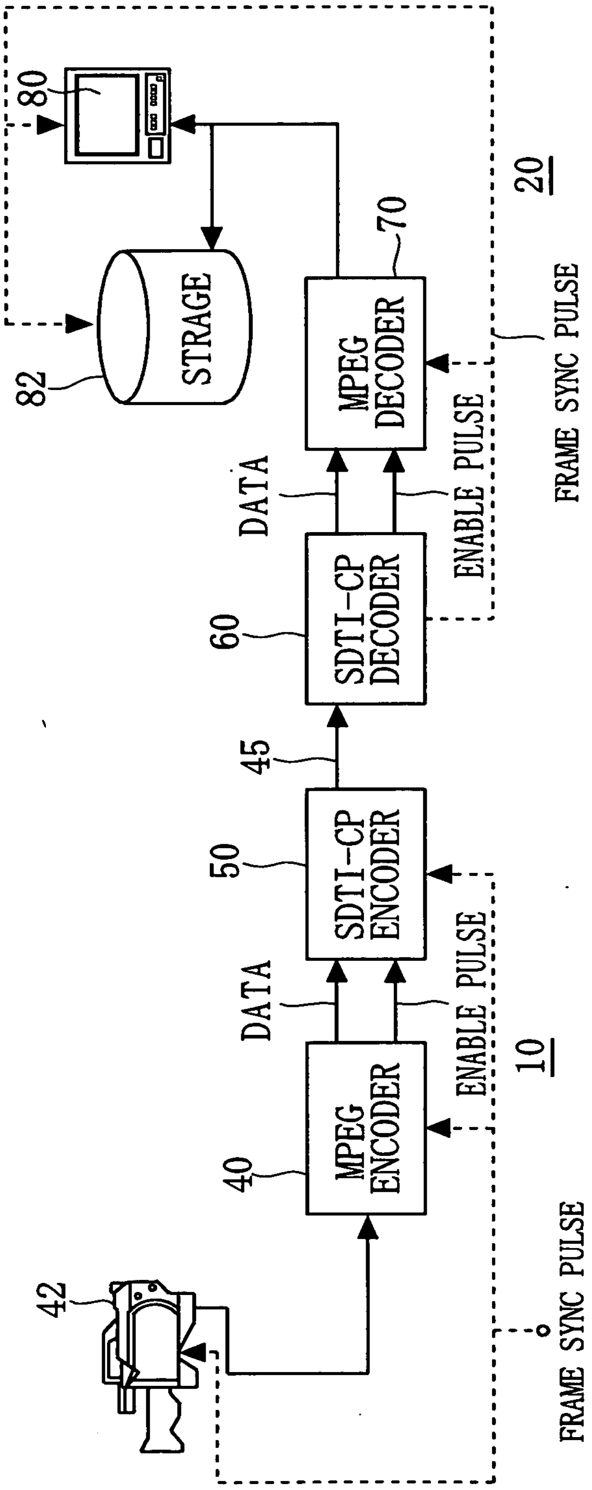

42
40
MPEG ENCODER
DATA
ENABLE PULSE
50
SDTI-CP ENCODER
45
60
SDTI-CP DECODER
DATA
ENABLE PULSE
70
MPEG DECODER
82
STRAGE
80
FRAME SYNC PULSE
FRAME SYNC PULSE
10
20

FIG. 19A

FIG. 19B CAMERA OUT

FIG. 19C FRAME CONVERSION

FIG. 19D MPEG COMPRESSED DATA

FIG. 19E ENABLE PULSE

FIG. 19F OUTPUT OF ENCODER

FIG. 19G OUTPUT OF DECODER

FIG. 19H ENABLE PULSE

FIG. 19I OUTPUT OF MPEG DECODER

FIG. 19J ENABLE PULSE

FIG. 19K FIELD CONVERSION OUTPUT

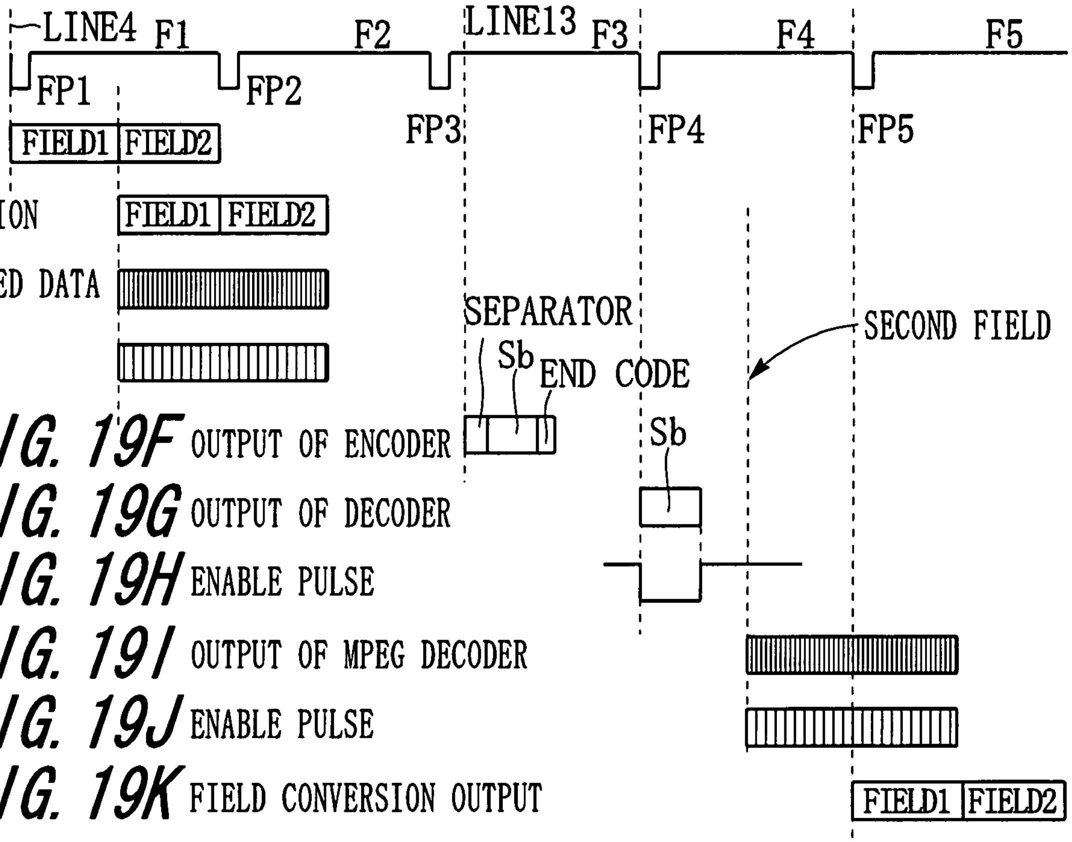
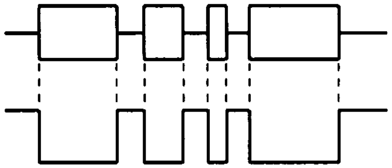

LINE4
F1
F2
LINE13
F3
F4
F5
FP1
FP2
FP3
FP4
FP5
FIELD1
FIELD2
FIELD1
FIELD2
SEPARATOR
Sb
END CODE
SECOND FIELD
Sb
FIELD1
FIELD2

FIG. 20A MPEG COMPRESSED DATA

FIG. 20B ENABLE PULSE



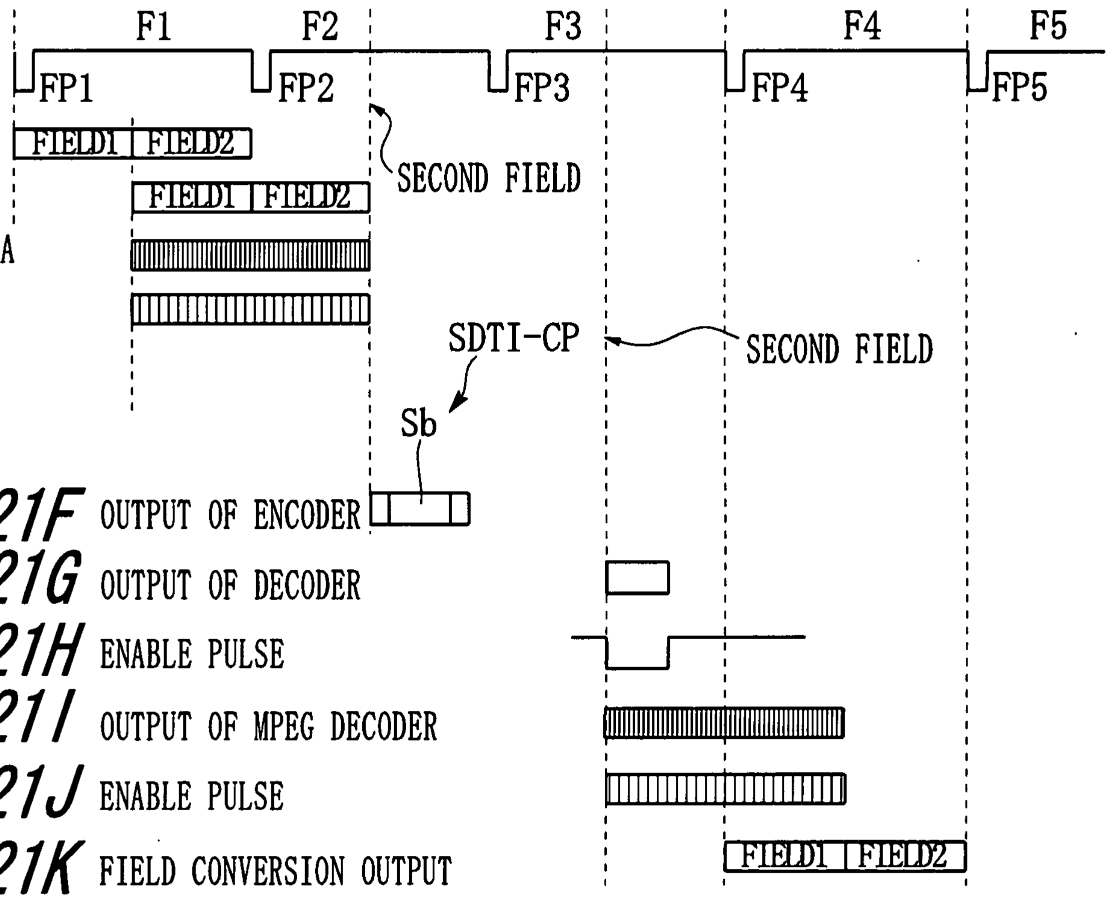

F1
F2
F3
F4
F5
FP1
FP2
FP3
FP4
FP5
FIELD1
FIELD2
FIELD1
FIELD2
SECOND FIELD
SDTI-CP
Sb
SECOND FIELD
FIELD1
FIELD2

FIG. 21A VIDEO FRAME PULSE

FIG. 21B CAMERA OUTPUT

FIG. 21C FRAME CONVERSION

FIG. 21D MPEG COMPRESSED DATA

FIG. 21E ENABLE PULSE

FIG. 21F OUTPUT OF ENCODER

FIG. 21G OUTPUT OF DECODER

FIG. 21H ENABLE PULSE

FIG. 21I OUTPUT OF MPEG DECODER

FIG. 21J ENABLE PULSE

FIG. 21K FIELD CONVERSION OUTPUT

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FIG. 22

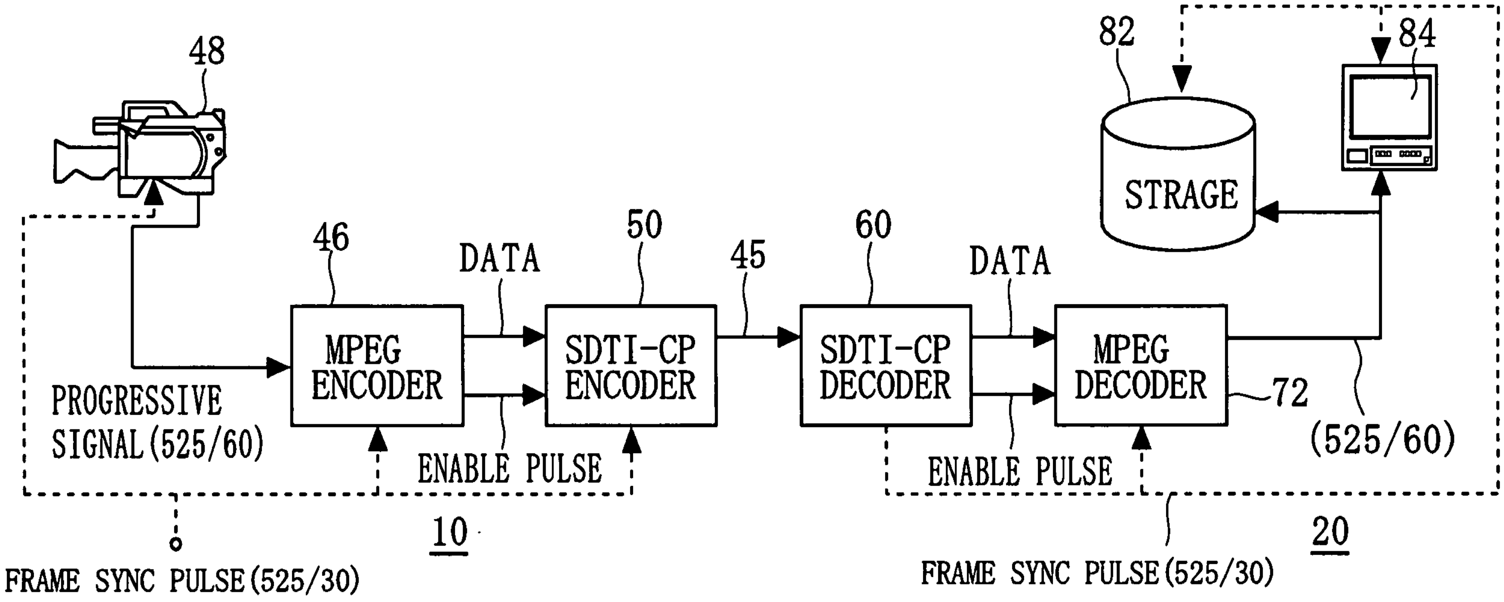

48
46
DATA
50
45
60
DATA
82
84
STRAGE
MPEG ENCODER
SDTI-CP ENCODER
SDTI-CP DECODER
MPEG DECODER
72
PROGRESSIVE SIGNAL (525/60)
ENABLE PULSE
ENABLE PULSE
(525/60)
10
20
FRAME SYNC PULSE (525/30)
FRAME SYNC PULSE (525/30)

FIG. 23A VIDEO FRAME PULSE

FIG. 23B CAMERA OUTPUT

FIG. 23C MPEG COMPRESSED DATA

FIG. 23D ENABLE PULSE

FIG. 23E OUTPUT OF ENCODER

FIG. 23F OUTPUT OF DECODER

FIG. 23G ENABLE PULSE

FIG. 23H OUTPUT OF MPEG DECODER

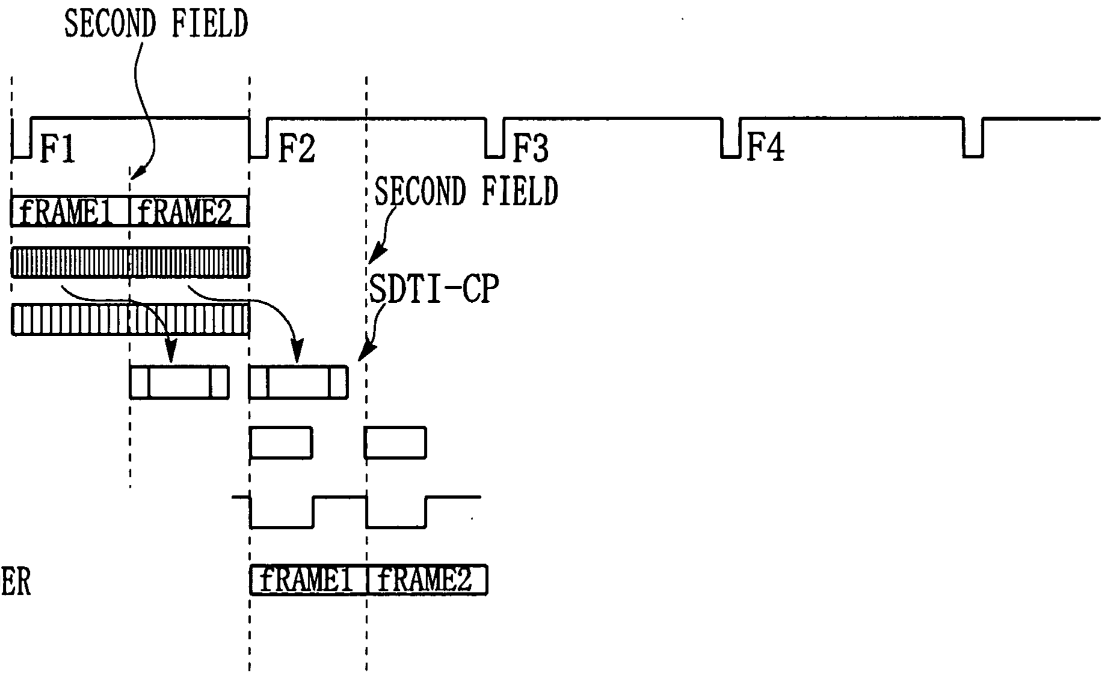
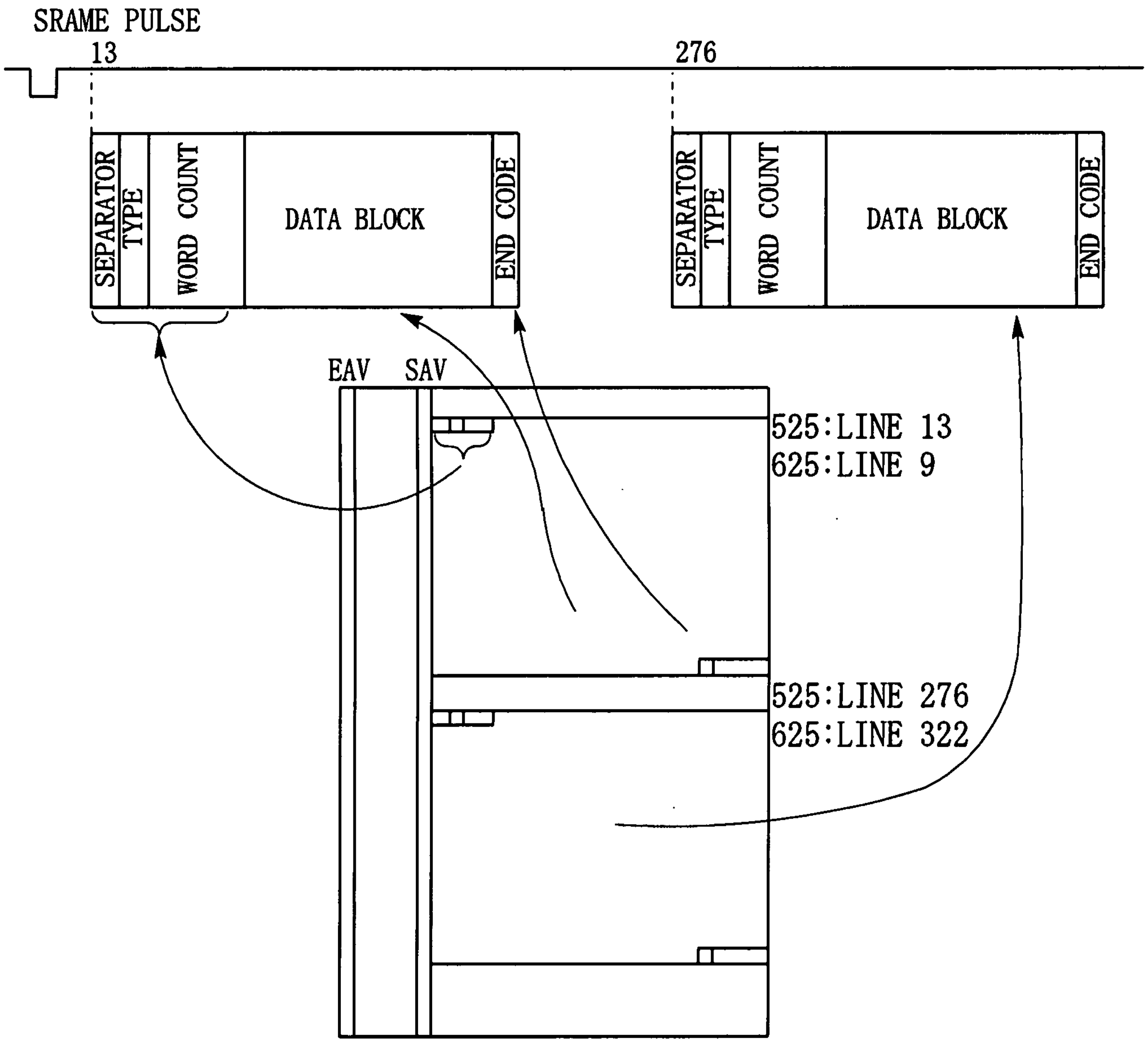

SECOND FIELD
F1
F2
F3
F4
SECOND FIELD
fRAME1
fRAME2
SDTI-CP
fRAME1
fRAME2

FIG. 24A

FIG. 24B

FIG. 24C


SRAME PULSE
13
276
SEPARATOR
TYPE
WORD COUNT
DATA BLOCK
END CODE
SEPARATOR
TYPE
WORD COUNT
DATA BLOCK
END CODE
EAV
SAV
525:LINE 13
625:LINE 9
525:LINE 276
625:LINE 322

# F/G. 25

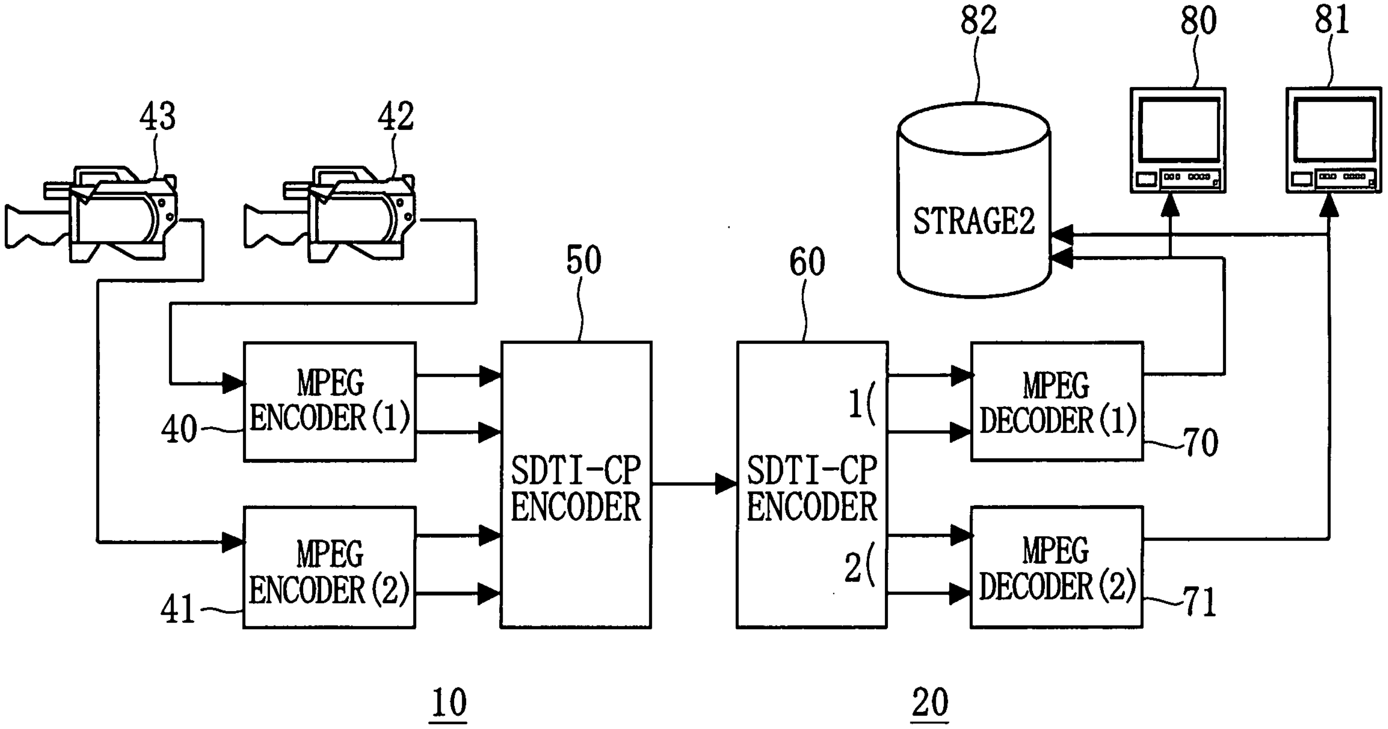
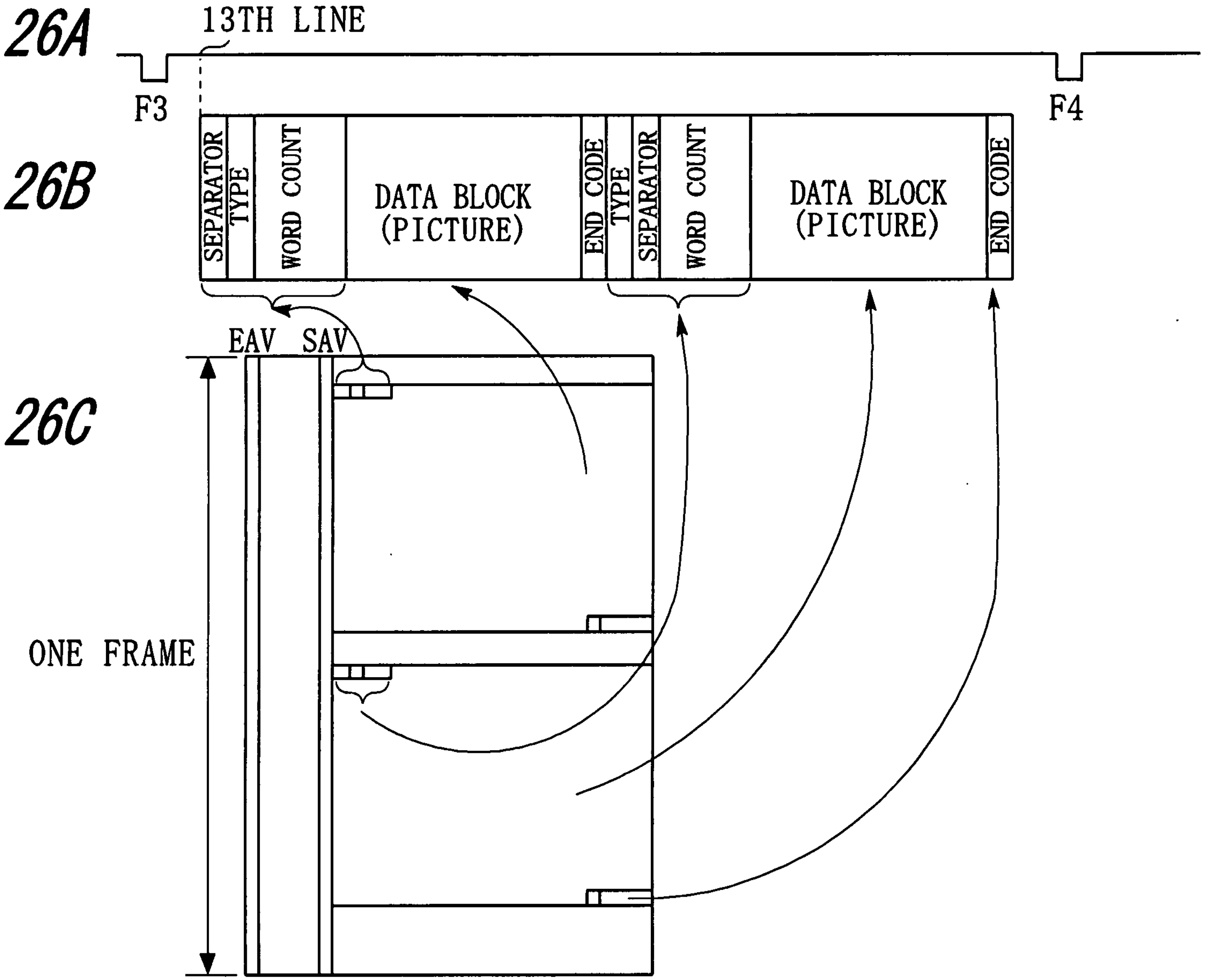

43
42
50
60
82
80
81
STRAGE2
MPEG ENCODER (1)
40
MPEG ENCODER (2)
41
SDTI-CP ENCODER
SDTI-CP ENCODER
1(
2(
MPEG DECODER (1)
70
MPEG DECODER (2)
71
10
20

FIG. 26A

FIG. 26B

FIG. 26C


13TH LINE
F3
F4
SEPARATOR
TYPE
WORD COUNT
DATA BLOCK (PICTURE)
END CODE
TYPE
SEPARATOR
WORD COUNT
DATA BLOCK (PICTURE)
END CODE
EAV
SAV
ONE FRAME

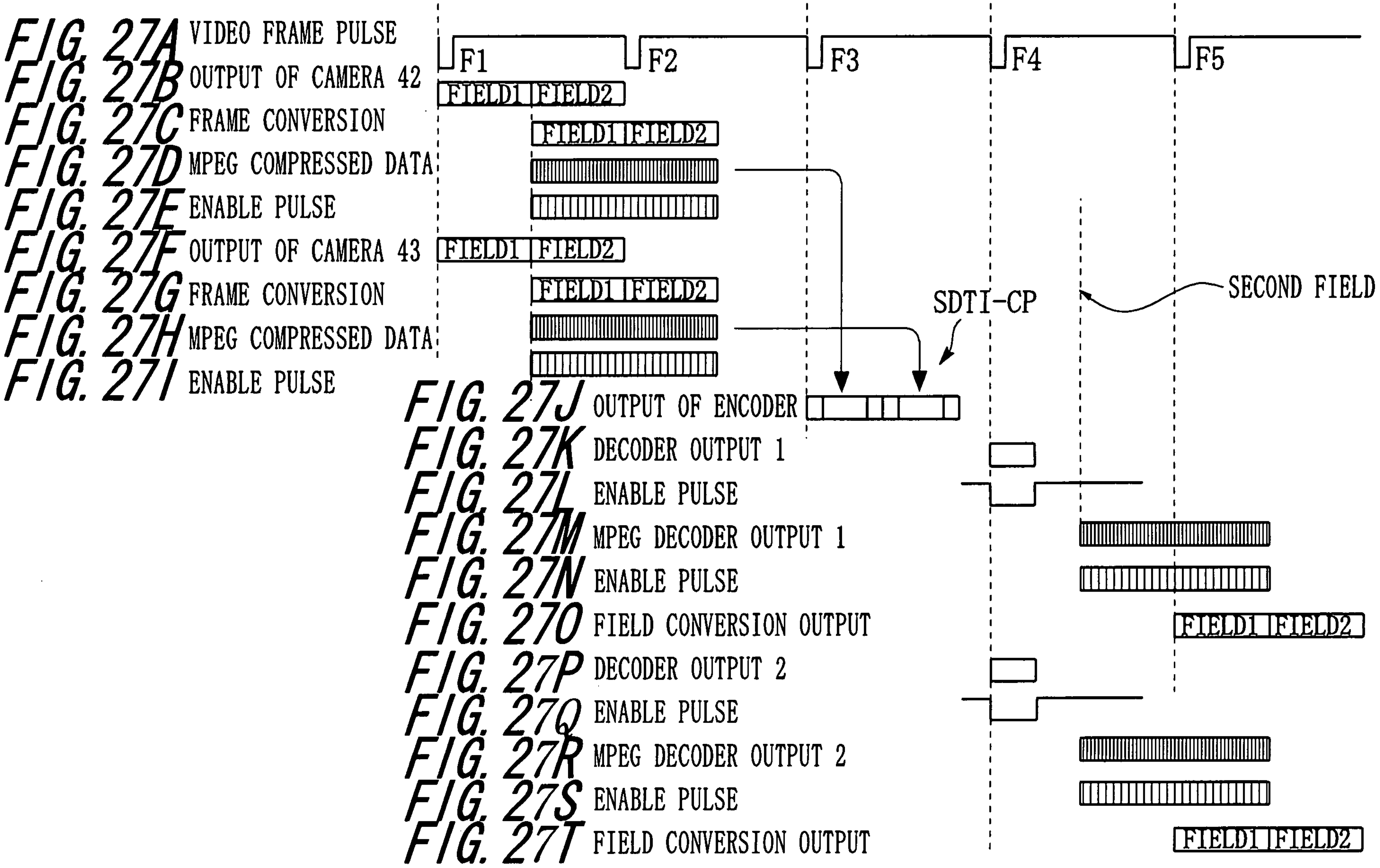


FIG. 27A VIDEO FRAME PULSE
FIG. 27B OUTPUT OF CAMERA 42
FIG. 27C FRAME CONVERSION
FIG. 27D MPEG COMPRESSED DATA
FIG. 27E ENABLE PULSE
FIG. 27F OUTPUT OF CAMERA 43
FIG. 27G FRAME CONVERSION
FIG. 27H MPEG COMPRESSED DATA
FIG. 27I ENABLE PULSE
FIG. 27J OUTPUT OF ENCODER
FIG. 27K DECODER OUTPUT 1
FIG. 27L ENABLE PULSE
FIG. 27M MPEG DECODER OUTPUT 1
FIG. 27N ENABLE PULSE
FIG. 27O FIELD CONVERSION OUTPUT
FIG. 27P DECODER OUTPUT 2
FIG. 27Q ENABLE PULSE
FIG. 27R MPEG DECODER OUTPUT 2
FIG. 27S ENABLE PULSE
FIG. 27T FIELD CONVERSION OUTPUT

09719791.032601

09719791.030601

FIG. 28A VIDEO FRAME PULSE

FIG. 28B OUTPUT OF CAMERA 42

FIG. 28C FRAME CONVERSION OUTPUT

FIG. 28D MPEG COMPRESSED DATA

FIG. 28E ENABLE PULSE

FIG. 28F OUTPUT OF CAMERA 43

FIG. 28G FRAME CONVERSION OUTPUT

FIG. 28H MPEG COMPRESSED DATA

FIG. 28I ENABLE PULSE

FIG. 28J OUTPUT OF ENCODER

FIG. 28K OUTPUT OF DECODER

FIG. 28L ENABLE PULSE

FIG. 28M OUTPUT OF MPEG DECODER

FIG. 28N ENABLE PULSE

FIG. 28O FIELD CONVERSION OUTPUT

FIG. 28P OUTPUT OF DECODER

FIG. 28Q ENABLE PULSE

FIG. 28R OUTPUT OF MPEG DECODER

FIG. 28S ENABLE PULSE

FIG. 28T FIELD CONVERSION OUTPUT

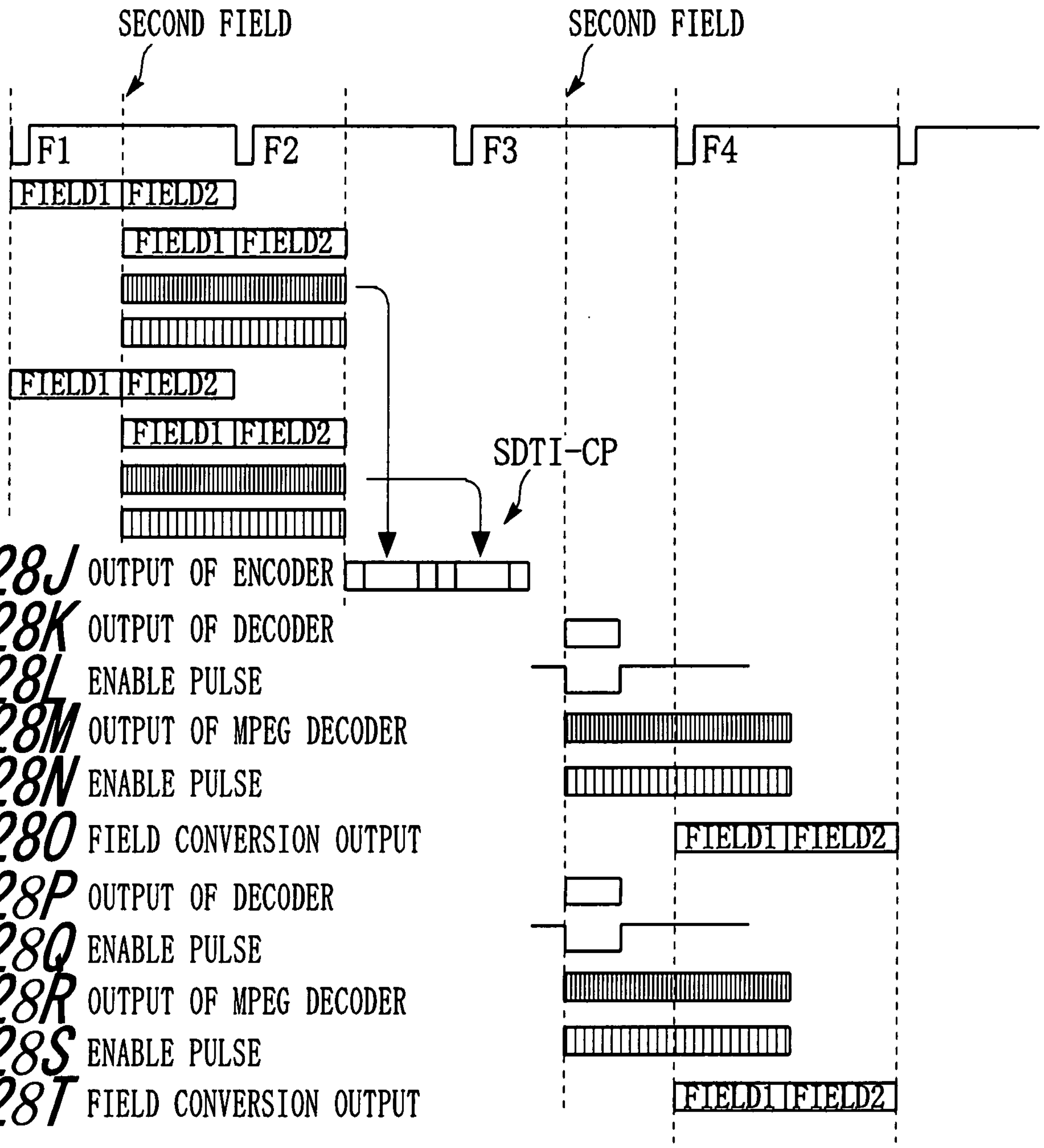

SECOND FIELD
SECOND FIELD
F1
F2
F3
F4
FIELD1
FIELD2
FIELD1
FIELD2
FIELD1
FIELD2
FIELD1
FIELD2
SDTI-CP
FIELD1
FIELD2
FIELD1
FIELD2

FIG. 29A

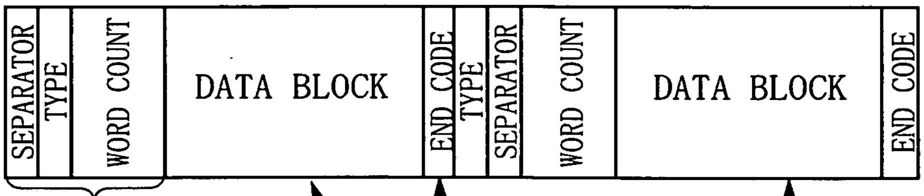

SEPARATOR
TYPE
WORD COUNT
DATA BLOCK
END CODE
TYPE
SEPARATOR
WORD COUNT
DATA BLOCK
END CODE

FIG. 29B

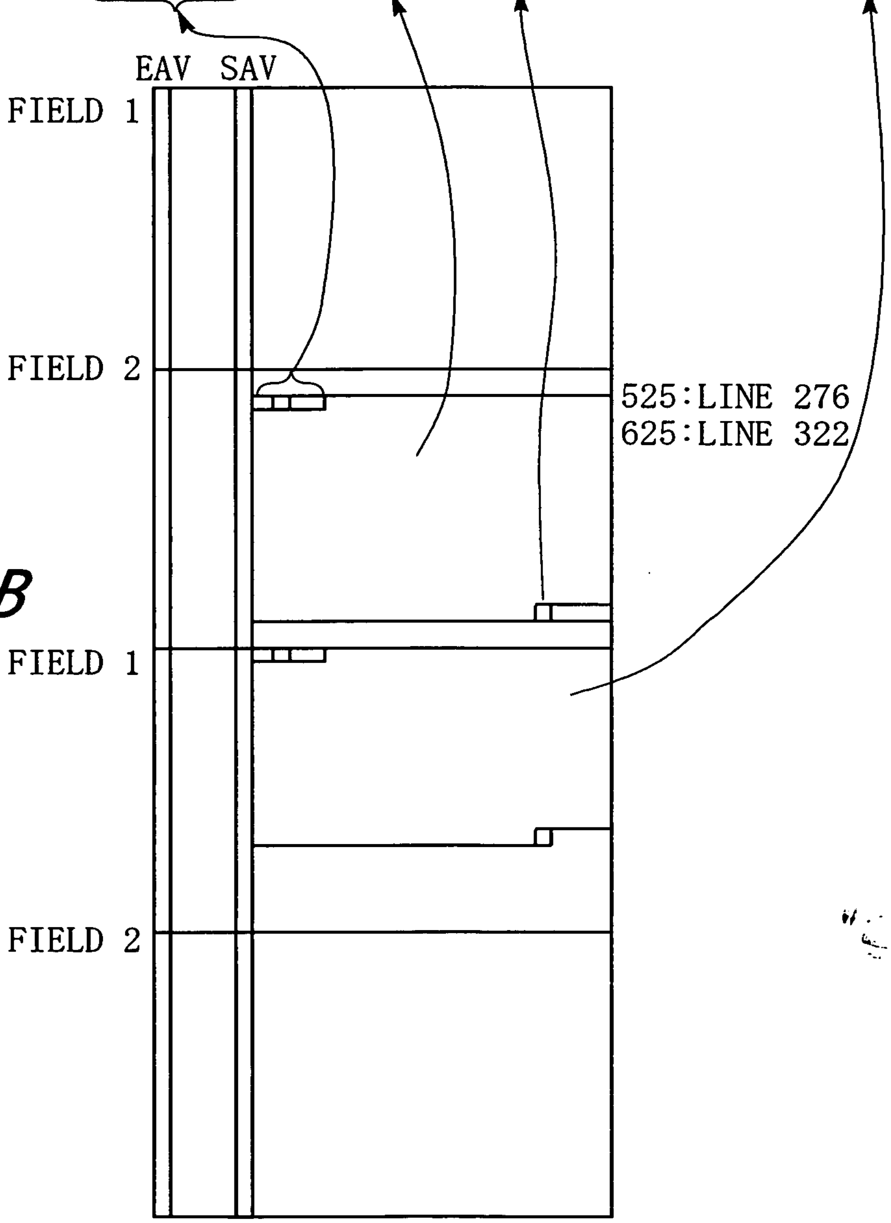

EAV
SAV
FIELD 1
FIELD 2
525:LINE 276
625:LINE 322
FIELD 1
FIELD 2

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FIG. 30

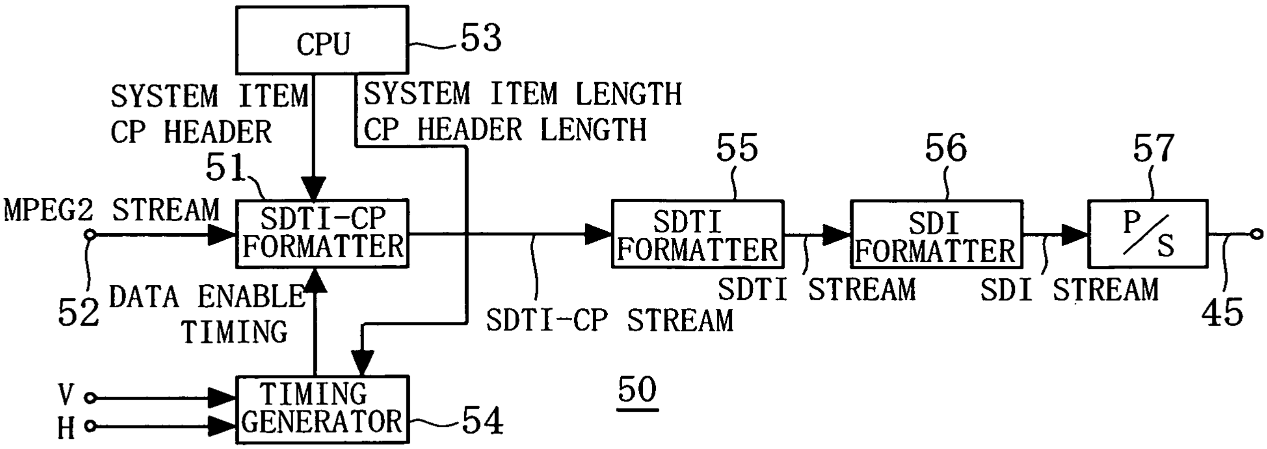

CPU
53
SYSTEM ITEM
CP HEADER
SYSTEM ITEM LENGTH
CP HEADER LENGTH
51
MPEG2 STREAM
SDTI-CP FORMATTER
52
DATA ENABLE TIMING
V
H
TIMING GENERATOR
54
SDTI-CP STREAM
55
SDTI FORMATTER
SDTI STREAM
56
SDI FORMATTER
SDI STREAM
57
P/S
45
50

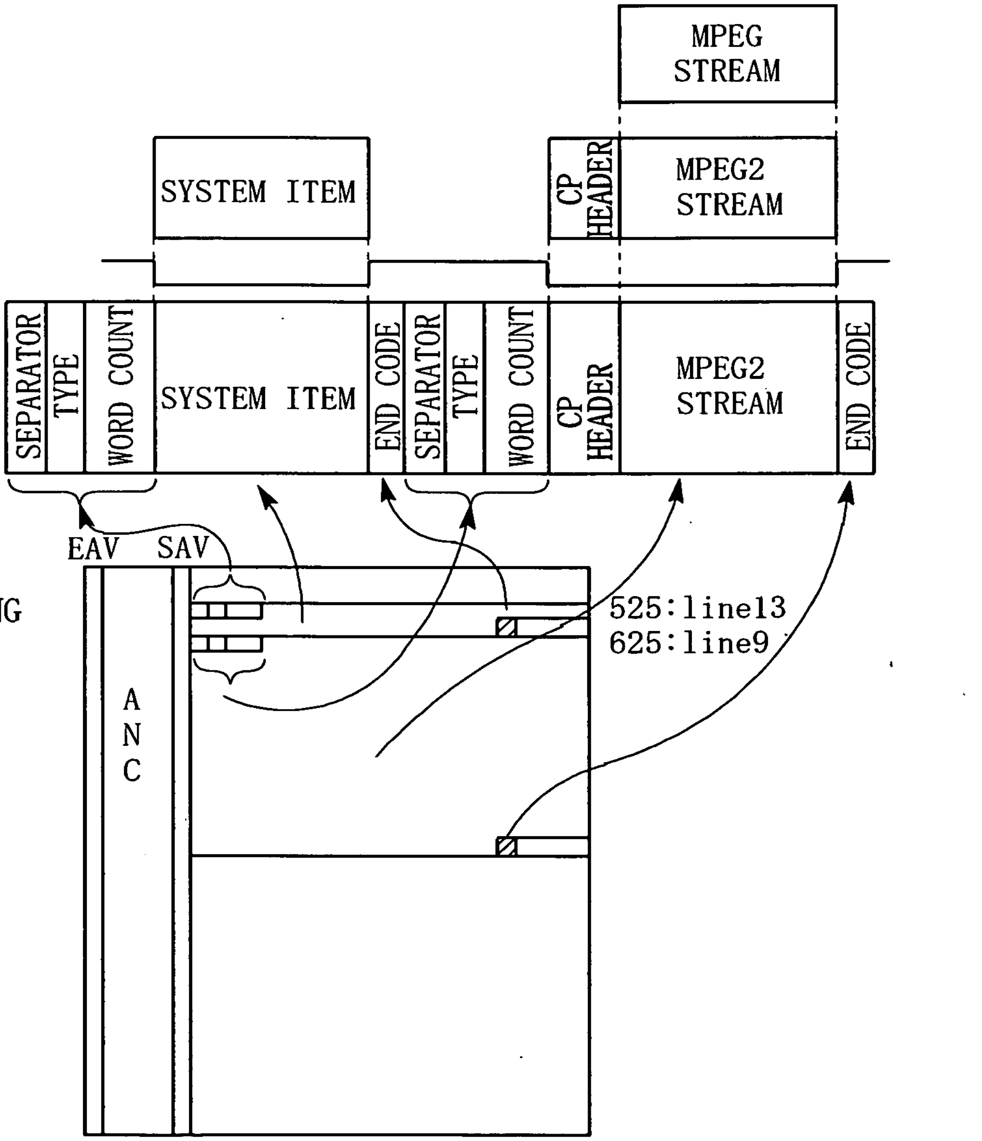
FIG. 31A
MPEG2 STREAM

FIG. 31B
SDTI-CP STREAM

FIG. 31C
DATA ENABLE

FIG. 31D
SDTI STREAM

FIG. 31E
EXAMPLE OF MAPPING OF SDI STREAM


MPEG STREAM
SYSTEM ITEM
CP HEADER
MPEG2 STREAM
SEPARATOR
TYPE
WORD COUNT
SYSTEM ITEM
END CODE
SEPARATOR
TYPE
WORD COUNT
CP HEADER
MPEG2 STREAM
END CODE
EAV
SAV
A N C
525:line13
625:line9

09719791 .030501